LIST OF CONTENTS

VOLUME 44

NUMBER 1

M. Locke	1	Caterpillars have evolved lungs for hemocyte gas exchange
A. J. Hart and J. S. Bale	21	Factors affecting the freeze tolerance of the hoverfly Syrphus ribesii (Diptera: Syrphidae)
S. Osorio, M. D. Piulachs and X. Bellés	31	Feeding and activation of corpora allata in the cockroach *Blattella germanica* (L.) (Dictyoptera, Blattellidae)
D. S. Neufeld and J. P. Leader	39	Electrochemical characteristics of ion secretion in malpighian tubules of the New Zealand alpine weta (Hemideina maori)
D. Ebbinghaus, P. M. Lösel, M. Lindemann, J. Scherkenbeck and C. P. W. Zebitz	49	Detection of major and minor sex pheromone components by the male codling moth Cydia pomonella (Lepidoptera: Tortricidae)
B. Vauchot, E. Provost, A. G. Bagneres, G. Riviere, M. Roux and J. L. Clement	59	Differential adsorption of allospecific hydrocarbons by the cuticles of two termite species, Reticulitermes santonensis and R. lucifugus grassei, living in a mixed colony
T. Yoshiga, K. Maruta and S. Tojo	67	Developmental changes of storage proteins and biliverdin-binding proteins in the haemolymph and fat body of the common cutworm, Spodoptera litura
P. G. Chambers, D. Raubenheimer and S. J. Simpson	77	The functional significance of switching interval in food mixing by Locusta migratoria
M. Goto, M. Fujii, K. Suzuki and M. Sakai	87	Factors affecting carbohydrate and free amino acid content in overwintering larvae of Enosima leucotaeniella
	I	Contents of *Insect Biochemistry and Molecular Biology*
	III	Diary
	V	Instructions to Authors

NUMBER 2

F. Ortego, M. Ruíz, P. Castañera	95	Effect of DIMBOA on growth and digestive physiology of *Sesamia nonagrioides* (Lepidoptera: Noctuidae) larvae
Eric Darrouzet, Francoise Rossignol, Franck Couillaud	103	The release of isoprenoids by locust corpora allata *in vitro*
Cliff G. Marriott, Graham J. Holloway	113	Colour pattern plasticity in the hoverfly, *Episyrphus balteatus*: The critical immature stage and reaction norm on developmental temperature
Seiji Tanaka, Yuko Suzuki	121	Physiological trade-offs between reproduction, flight capability and longevity in a wing-dimorphic cricket, *Modicogryllus confirmatus*
S. Eichler, G. A. Schaub	131	The effects of aposymbiosis and of an infection with *Blastocrithidia triatomae* (trypanosomatidae) on the tracheal system of the reduviid bugs *Rhodnius prolixus* and *Triatoma infestans*
Louise A. Malone, Elisabeth P. J. Burgess, John T. Christeller, Heather S. Gatehouse	141	*In vivo* responses of honey bee midgut proteases to two protease inhibitors from potato
Claudia Maria Canato, Fernando Sérgio Zucoloto	149	Feeding behavior of *Ceratitis capitata*
Ralph W. Howard, Jon S. Miller, David W. Stanley	157	The influence of bacterial species and intensity of infections on nodule formation in insects

Vladimir Kostal, Jan Sula, Petr Simek 165 Physiology of drought tolerance and cold hardiness of the mediterranean tiger moth *Cymbalophora pudica* during summer diapause

Jacob Cohen 175 Phosphorylation polymorphism in the yolk protein 2 of *Drosophila hawaiiensis*

Mattias C. Larsson, Bill S. Hansson 189 Receptor neuron responses to potential sex pheromone components in the caddisfly *Rhyacophila nubila* (Trichoptera: rhyacophilidae)

I Contents of *Insect Biochemistry and Molecular Biology*

III Diary

V Instructions to Authors

NUMBERS 3–4

A.M. Emery, P.F. Billingsley, P.D. Ready and M.B.A. Djamgoz 197 Review: Insect Na^+/K^+-ATPase

M.R. Worland, G. Grubor-Lajsic and P.O. Montiel 211 Partial desiccation induced by sub-zero temperatures as a component of the survival strategy of the Arctic collembolan *Onychiurus arcticus* (Tullberg)

Kyeong-Yeoll Lee, Shivanand Hiremath and David L. Denlinger 221 Expression of actin in the central nervous system is switched off during diapause in the gypsy mouth, *Lymantria dispar*

Isabelle Van Eyseren, François Tiaho, Janine Le Guen, Jean Claude Guillet and Yves Pichon 227 Effects of nicotinic and muscarinic ligands on embryonic neurones of *Periplaneta americana* in primary culture: a whole cell clamp study

Wulfila Gronenberg, Bert Hölldobler and Gary D. Alpert 241 Jaws that snap: control of mandible movements in the ant *Mystrium*

H.M. Smid, H. Schooneveld, M.L.L.G. Deserno, B. Put and J.M. Vlak 255 Expression of a male accessory gland peptide of *Leptinotarsa decemlineata* in insect cells infected with a recombinant baculovirus

Cécile Girard, Martine Le Métayer, Bruno Zaccomer, Elspeth Bartlet, Ingrid Williams, Michel Bonadé-Bottino, Minh-Hà Pham-Delegue and Lise Jouanin 263 Growth stimulation of beetle larvae reared on a transgenic oilseed rape expressing a cysteine proteinase inhibitor

Annemarie Kroon, René L. Veenendaal and Alfred Veerman 271 Response to photoperiod during diapause development in the spider mite *Tetranychus urticae*

Heiner Birkenbeil 279 Intracellular calcium in prothoracic glands of *Manduca sexta*

Claire Kremen and H. Frederik Nijhout 287 Control of pupal commitment in the imaginal disks of *Precis coenia* (Lepidoptera: Nymphalidae)

Rico L. Rana, Gautam Sarath and David W. Stanley 297 A digestive phospholipase A_2 in midguts of tobacco hornworms, *Manduca sexta* L.

Christa Grossniklaus-Bürgin, Rita Pfister-Wilhelm, Veronika Meyer, Karl Treiblmayr and Beatrice Lanzrein 305 Physiological and endocrine changes associated with polydnavirus/venom in the parasitoid-host system *Chelonus inanitus-Spodoptera littoralis*

Thomas J. Kelly, Dale B. Gelman, Darcy A. Reed and Nancy E. Beckage 323 Effects of parasitization by *Cotesia congregata* on the brain-prothoracic gland axis of its host, *Manduca sexta*

Yukihiro Sato, Kunihiro Shiomi, Hiroyuki Saito, Kunio Imai and Okitsgu Yamashita 333 Phe-X-Pro-Arg-Leu-NH_2 peptide producing cells in the central nervous system of the silkworm, *Bombyx mori*

G.A. Horridge 343 Spatial coincidence of cues in visual learning by the honeybee (*Apis mellifera*)

C. Bressac and C. Chevrier	351	Offspring and sex ratio are independent of sperm management in *Eupelmus orientalis* females
	I	Editorial Announcement
	V–VI	Contents of *Insect Biochemistry and Molecular Biology*
	VII–VIII	Diary
	IX–X	Instructions to Authors

NUMBERS 5–6

Michael Chippendale and John Reese	361	Obituary
M. P. Pener and Yoram Yerushalmi	365	The physiology of locust phase polymorphism: an update
J. P. Ianowski, G. Manrique, J. A. Núñez and C. R. Lazzari	379	Feeding is not necessary for triggering plasticization of the abdominal cuticle in haematophagous bugs
Ines C. Schmidt Capella and Klaus Hartfelder	385	Juvenile hormone effect on DNA synthesis and apoptosis in caste-specific differentiation of the larval honey bee (*Apis mellifera* L.) ovary
Norbert Hrassnigg and Karl Crailsheim	393	The influence of brood on the pollen consumption of worker bees (*Apis mellifera* L.)
S. -J. Chiou, A. Cerstiaens, S. P. Kotanen, A. De Loof and L. Schoofs	405	Insect larvae contain substances toxic to adults: the discovery of paralysins
Günther Raspotnig, Bernd Freitag, Gerald Kastberger, Werner Windischhofer and Hans-Jörg Leis	413	5-Methyl-2-phenyl-2-hexenal in the scent gland secretion of male cave crickets, *Troglophilus clavicola* and *T. neglectus* (Ensifera: Rhaphidophoridae)
Matilde Eizaguirre, Jordi Prats, Meritxell Abellana, Carmen López, Monserrat Llovera and Ramon Canela	419	Juvenile hormone and diapause in the Mediterranean corn borer, *Sesamia nonagrioides*
Frank Scholz and I. Zerbst-Boroffka	427	Environmental hypoxia affects osmotic and ionic regulation in freshwater midge-larvae
Eric Wajnberg and Stefano Colazza	437	Genetic variability in the area searched by a parasitic wasp: analysis from automatic video tracking of the walking path
P. G. Allingham, I. J. East, R. L. Kerlin and D. H. Kemp	445	Digestion of host immunoglobulin and activity of midgut proteases in the buffalo fly *Haematobia irritans exigua*
R. Graf, A. O. Lea and H. Briegel	451	A temporal profile of the endocrine control of trypsin synthesis in the yellow fever mosquito, *Aedes aegypti*
J. S. Hu and S. B. Vinson	455	The *in vitro* development from egg to prepupa of *Campoletis sonorensis* (Hymenoptera: Ichneumonidae) in an artificial medium: importance of physical factors
Benedict Hollister and Christopher A. Mullin	463	Behavioral and electrophysiological dose-response relationships in adult western corn rootworm (*Diabrotica virgifera virgifera* LeConte) for host pollen amino acids
A. Liscia, R. Majone, P. Solari, I. Tomassini Barbarossa and R. Crnjar	471	Sugar response differences related to sensillum type and location on the labella of *Protophormia terraenovae*: a contribution to spatial representation of the stimulus
Denis Thiéry and Frédéric Marion-Poll	483	Electroantennogram responses of Douglas-fir seed chalcids to plan volatiles
Bela Keshan and Arun K. Ray	491	Action of estradiol-17β on the synthetic activity of the silk gland in *Bombyx mori* L.

M. M. G. Bitondi, I. M. Mora, Z. L. P. Simões and V. L. C. Figueiredo 499 The *Apis mellifera* pupal melanization program is affected by treatment with a juvenile hormone analogue

S. R. Palli, T. R. Ladd, A. R. Ricci, M. Primavera, I. N. Mungrue, A. S. D. Pang and A. Retnakaran 509 Synthesis of the same two proteins prior to larval diapause and pupation in the spruce budworm, *Choristoneura fumiferana*

Keikichi Uchida, Daijiro Ohmori, Yuki Eshita, Tsutomu Oda, Yukio Kato, Kyoko Tomizawa, Atsuko Moribayashi and Akihiro Fukunaga 525 Ovarian development induced in decapitated female *Culex pipiens pallens* mosquitoes by infusion of physiological quantities of 20-hydroxyecdysone together with amino acids

I Contents of *Insect Biochemistry and Molecular Biology*

III Diary

V Instructions to Authors

NUMBERS 7–8

Kevin S. Powell, Jaqui Spence, M. Bharathi, John A. Gatehouse, Angharad M.R. Gatehouse 529 Immunohistochemical and devlopmental studies to elucidate the mechanism of action of the snowdrop lectin on the rice brown planthopper, *Nilaparvata lugens* (Stal).

D.S. Saunders, Scott A.L. Hayward 541 Geographical and diapause-related cold tolerance in the blow fly, *Calliphora vicina*

M.S. Gonzalez, N.F.S. Nogueira, D. Feder, W. de Souza, P. Azambuja, E.S. Garcia 553 Role of the head in the ultrastructural midgut organization in *Rhodnius prolixus* larvae: evidence from head transplantation experiments and ecdysone therapy

Michael C. Quinlan, Michael J. O'Donnell 561 Anti-diuresis in the blood-feeding insect *Rhodnius prolixus* Stål: antagonistic actions of cAMP and cGMP and the role of organic acid transport

Cécile Girard, Michel Bonadé-Bottino, Minh-Hà Pham-Delegue, Lise Jouanin 569 Two strains of cabbage seed weevil (Coleoptera: Curculionidae) exhibit differential susceptibility to a transgenic oilseed rape expressing oryzacystatin I

R.B. Josens, W.M. Farina, F. Roces 579 Nectar feeding by the ant *Camponotus mus*: intake rate and crop filling as a function of sucrose concentration

Kenji Tomioka, Makoto Sakamoto, Yuka Harui, Nobutaka Matsumoto, Akira Matsumoto 587 Light and temperature cooperate to regulate the circadian locomotor rhythm of wild type and *period* mutants of *Drosophila melanogaster*

Gregory R. Wolfe, Donald L. Hendrix, Michael E. Salvucci 597 A thermoprotective role for sorbitol in the silverleaf whitefly, *Bemisia argentifolii*

Vladimir Kostal, Hirofumi Noguchi, Kimio Shimada, Yoichi Hayakawa 605 Developmental changes in dopamine levels in larvae of the fly *Chymomyza costata*: comparison between wild-type and mutant-nondiapause strains

C. Jaco Klok, Steven L. Chown 615 Interactions between desiccation resistance, host-plant contact and the thermal biology of a leaf-dwelling sub-antarctic caterpillar, *Embryonopsis halticella* (Lepidoptera: Yponomeutidae)

T.L. Wilkinson, A.E. Douglas 629 Host cell allometry and regulation of the symbiosis between pea aphids, *Acyrthosiphon pisum*, and bacteria, *Buchnera*

David S. Richard, Noel L. Watkins, Robert B. Serafin, Lawrence I. Gilbert 637 Ecdysteroids regulate yolk protein uptake by *Drosophila melanogaster* oocytes

L. Zurek, B.A. Keddie 645 Significance of methanogenic symbionts for development of the American cockroach, *Periplaneta americana*

Man Yeon Choi, Sadahiro Tatsuki, Kyung Saeng Boo 653 Regulation of sex pheromone biosynthesis in the oriental tobacco budworm, *Helicoverpa assulta* (Lepidoptera: Noctuidae)

Elisabeth Hansen-Delkeskamp 659 Development of specific responses in antennal taste hairs after ecdysis. An elctrophysiological investigation of the cockroach, *Periplaneta brunnea*

Xavier Fauvergue, Pierre Fouillet, Antonio L.M. Mesquita, Michel Boulétreau 667 Male orientation to trail sex pheromones in parasitoid wasps: does the spatial distribution of virgin females matter?

Robb W.S. Schneider, Brad A. Price, Paul A. Moore 677 Antennal morphology as a physical filter of olfaction: temporal tuning of the antennae of the honeybee, *Apis mellifera*

T. Pankiw, Z.-Y. Huang, M.L. Winston, G.E. Robinson 685 Queen mandibular gland pheromone influences worker honey bee (*Apis mellifera* L.) foraging ontogeny and juvenile hormone titers

Heidi M. Appel, Anthony Joern 693 Gut physicochemistry of grassland grasshoppers

I Contents of *Insect Biochemistry and Molecular Biology*

III Diary

V Instructions to Authors

NUMBER 9

S. Bradleigh Vinson, Francesco Pennacchio, Beatrice Lanzrein 701 Parasitoid-host interactions at the physiological and molecular level

S. B. Vinson, E. M. Hegazi 703 A possible mechanism for the physiological suppression of conspecific eggs and larvae following superparasitism by solitary endoparasitoids

Prem Gupta, Stephen M. Ferkovich 713 Interaction of calyx fluid and venom from *Microplitis croceipes* (Braconidae) on developmental disruption of the natural host, *Heliocoverpa zea*, and two atypical hosts, *Galleria mellonella* and *Spodoptera exigua*

Darcy A. Reed, John J. Brown 721 Host/parasitoid interactions: critical timing of parasitoid-derived products

Eiko Tagashira, Toshiharu Tanaka 733 Parasitic castration of *Pseudaletia separata* by *Cotesia kariyai* and its association with polydnavirus gene expression

S. N. Thompson, D. L. Dahlman 745 Aberrant nutritional regulation of carbohydrate synthesis by parasitized *Manduca sexta* L.

Davy Jones, Susanne Wache 755 Preultimate 4th/5th instar *Trichoplusia ni* naturally-injected with venom-calyx fluid from *Chelonus curvimaculatus* precociously metamorphose, rather than obey the metamorphic size threshold that would normally compel molting to a 5th/6th instar

Eric J. Schepers, Douglas L. Dahlman, Deqing Zhang 767 *Microplitis croceipes* teratocytes: *in vitro* culture and biological activity of teratocyte secreted protein

M. C. Digilio, F. Pennacchio, E. Tremblay 779 Host regulation effects of ovary fluid and venom of *Aphidius ervi* (Hymenoptera: Braconidae)

Bruce A. Webb, Liwang Cui 785 Relationships between polydnavirus genomes and viral gene expression

Dominique Trudeau, M. R. Strand 795 A limited role in parasitism for *Microplitis demolitor* polydnavirus

Patrice Eslin, Geneviève Prévost 807 Hemocyte load and immune resistance to *Asobara tabida* are correlated in species of the *Drosophila melanogaster* subgroup

Peter Stettler, Tina Trenczek, Toni Wyler, Rita Pfister-Wilhelm, Beatrice Lanzrein 817 Overview of parasitism associated effects on host haemocytes in larval parasitoids and comparison with effects of the egg-larval parasitoid *Chelonus inanitus* on its host *Spodoptera littoralis*

Dale B. Gelman, Darcy A. Reed, Nancy E. Beckage 833 Manipulation of fifth-instar host (*Manduca sexta*) ecdysteroid levels by the parasitoid wasp *Cotesia congregata*

Francesco Pennacchio, Patrizia Falabella, Rocco Sordetti, Paola Varricchio, Carla Malva, S. Bradleigh Vinson 845 Prothoracic gland inactivation in *Heliothis virescens* (F.) (Lepidoptera:Noctuidae) larvae parasitized by *Cardiochiles nigriceps* Viereck (Hymenoptera:Braconidae)

Yoichi Hayakawa, Atsushi Ohnishi, Yasuhisa Endo 859 Mechanism of parasitism-induced elevation of haemolymph growth-blocking peptide levels in host insect larvae (*Pseudaletia separata*)

I Contents of *Insect Biochemistry and Molecular Biology*

III Diary
V Instructions to Authors

NUMBER 10

Sho Sakurai, Masae Kaya, Shin'Ichirol Satake 867 Hemolymph ecdysteroid titer and ecdysteroid-dependent developmental events in the last-larval stadium of the silkworm, *Bombyx mori*: role of low ecdysteroid titer in larval-pupal metamorphosis and a reappraisal of the head critical period

Peter Roessingh, Abdelghani Bouaïchi, Stephen J. Simpson 883 Effects of sensory stimuli on the behavioural phase state of the desert locust, *Schistocerca gregaria*

Eleanor J. Hayes, Richard Wall, Katherine E. Smith 895 Measurement of age and population age structure in the blowfly, *Lucilia sericata* (Meigen) (Diptera: Calliphoridae)

Yong Ihl Park, Sonny B. Ramaswamy, Asoka Srinivasan 903 Spermatophore formation and regulation of egg maturation and oviposition in female *Heliothis virescens* by the male

C. Rivault, A. Cloarec, L. Sreng 909 Cuticular extracts inducing aggregation in the German cockroach, *Blattella germanica* (L.)

K. C. Park, Jim Hardie 919 An improved aphid electroantennogram

Norbert Hrassnigg, Karl Crailsheim 929 Adaptation of hypopharyngeal gland development to the brood status of honeybee (*Apis mellifera* L.) colonies

Uwe Oeh, Matthias W. Lorenz, Klaus H. Hoffmann 941 Ecdysteroid release by the prothoracic gland of *Gryllus bimaculatus* (Ensifera: Gryllidae) during larval–adult development

Maureen J. Gorman, Alex M. Schwartz, Susan M. Paskewitz 947 The role of surface characteristics in eliciting humoral encapsulation of foreign bodies in *Plasmodium*-refractory and -susceptible strains of *Anopheles gambiae*

Paul G. Fields, Francis Fleurat-Lessard, Lucien Lavenseau, Gérard Febvay, Lionel Peypelut, Guy Bonnot 955 The effect of cold acclimation and deacclimation on cold tolerance, trehalose and free amino acid levels in *Sitophilus granarius* and *Cryptolestes ferrugineus* (Coleoptera)

Danielle K. Lewis, J. Y. Bradfield, L. L. Keeley 967 Feeding effects on gene expression of the hypertrehalosemic hormone in the cockroach, *Blaberus discoidalis*

Z. I. A. Al-Fifi, J. H. Anstee, K. Bowler 973 The action of inhibitors of protein kinases on fluid and ion secretion by Malpighian tubules of *Locusta migratoria*, L.

Thomas Martau, Franz Romer 981 Degeneration of moulting glands in male crickets

V. Šustr, W. Block 991 Temperature dependence and acclimatory response of amylase in the High Arctic springtail *Onychiurus arcticus* (Tullberg) compared with the temperate species *Protaphorura armata* (Tullberg)

K-G. Heller, S. Faltin, P Fleischmann, O. V. Helversen 1001 The chemical composition of the spermatophore in some species of phaneropterid bushcrickets (Orthoptera: Tettigonioidea)

Shin G. Goto, Kiyohito M. Yoshida, Masahito T. Kimura 1009 Accumulation of *Hsp70* mRNA under environmental stresses in diapausing and nondiapausing adults of *Drosophila triauraria*
I Contents of *Insect Biochemistry and Molecular Biology*
III Diary
V Instructions to Authors

NUMBER 11

Paul E. Brown, Moray Anderson 1017 Morphology and ultrastructure of sense organs on the ovipositor of *Trybliographa rapae*, a parasitoid of the cabbage root fly

G.C. Unnithan, T.D. Sutherland, D.W. Cromey, R. Feyereisen 1027 A factor causing stable stimulation of juvenile hormone synthesis by *Diploptera punctata* corpora allata in vitro

Tzy-Mei Lin, How-Jing Lee 1039 Parallel control mechanisms underlying locomotor activity and sexual receptivity of the female German cockroach, *Blattella germanica* (L.)

Stanislav N. Gorb 1053 Origin and pathway of the epidermal secretion in the damselfly head-arresting system (Insecta: Odonata)

J. Girardie, S. Geoffre, J.-P. Delbecque, A. Girardie 1063 Arguments for two distinct gonadotropic activities triggered by different domains of the ovary maturating parsin of *Locusta migratoria*

Keiko Kadono-Okuda, Frantisek Weyda, Takashi Okuda 1073 *Dinocampus* (= *Perilitus*) *coccinellae* teratocyte-specific polypeptide: its accumulative property, localization and characterization

Vernon French, Marieke Feast, Linda Partridge 1081 Body size and cell size in *Drosophila*: the developmental response to temperature

Robert A. Krebs, Martin E. Feder 1091 Hsp70 and larval thermotolerance in *Drosophila melanogaster*: how much is enough and when is more too much?

Masahiko Watanabe, Kazuhiro Tanaka 1103 Adult diapause and cold hardiness in *Aulacophora nigripennis* (Coleoptera: Chrysomelidae)

Shengqiang Shu, Yong Ihl Park, Sonny B. Ramaswamy, Asoka Srinivasan 1111 Temporal profiles of juvenile hormone titers and egg production in virgin and mated females of *Heliothis virescens* (Noctuidae)

I. Ali, C. Finley, J. E. Steele 1119 Evidence for the participation of arachidonic acid metabolites in trehalose efflux from the hormone activated fat body of the cockroach (*Periplaneta americana*)

I Contents of *Insect Biochemistry and Molecular Biology*

III Diary

V Instructions to Authors

NUMBER 12

P. Helbling, R. Graf 1127 Localization of the mosquito insulin receptor homolog (MIR) in reproducing yellow fever mosquitoes (*Aedes aegypti*)

Deborah M. Cottam, Martin J. Milner 1137 The effect of juvenile hormone on the response of the Drosophila imaginal disc cell line Cl 8+ to moulting hormone

W.T. Catton 1145 A test of the visual acuity of the locust eye

Zhe-Feng Gong, Shou-Zhen Xia, Li Liu, Chun-Hua Feng, Ai-Ke Guo 1149 Operant visual learning and memory in *Drosophila* mutants *dunce*, *amnesiac* and *radish*

Claudio R. Lazzari, Carolina E. Reiseman, Teresita C. Insausti 1159 The role of the ocelli in the phototactic behaviour of the haematophagous bug *Triatoma infestans*

J.-L. Hemptinne, G. Lognay, A.F.G. Dixon 1163 Mate recognition in the two-spot ladybird beetle, *Adalia bipunctata*: role of chemical and behavioural cues

Jon P. Costanzo, Tricia L. Humphreys, Richard E. Lee Jr., Jason B. Moore, Marcia R. Lee, Jeffrey A. Wyman 1173 Long-term reduction of cold hardiness following ingestion of ice-nucleating bacteria in the Colorado potato beetle, *Leptinotarsa decemlineata*

Joji M. Otaki 1181 Color-pattern modifications of butterfly wings induced by transfusion and oxyanions

Akifumi Iwama, Tatsuaki Shibuya 1191 Physiology and morphology of olfactory neurons associating with the protocerebral lobe of the honeybee brain

Nobuyoshi Katagiri, Osamu Ando, Okitsugu Yamashita 1205 Reduction of glycogen in eggs of the silkworm, *Bombyx mori*, by use of a trehalase inhibitor, trehazolin, and diapause induction in glycogen-reduced eggs

Elaine Fitches, John A. Gatehouse	1213	A comparison of the short and long term effects of insecticidal lectins on the activities of soluble and brush border enzymes of tomato moth larvae (*Lacanobia oleracea*)
Amanda Van Zyl, M.C. Van Der Westhuizen, T.C. De K. Van Der Linde	1225	Aspects of excretion of antlion larvae (*Neuroptera: myrmeleontidae*) during feeding and non-feeding periods
Shin G. Goto, Masahito T. Kimura	1233	Heat- and cold-shock responses and temperature adaptations in subtropical and temperate species of *Drosophila*
	I	Contents of *Insect Biochemistry and Molecular Biology*
	III	Diary